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ABSTRACT

Theoretical propositions and research findings concerning children's motivation to learn are discussed and implications for early childhood education are indicated. The discussion begins by defining and illustrating the motivational states of intrinsic motivation, extrinsic motivation, and amotivation. Problems of structuring interaction between teachers and students to promote intrinsically motivated learning are considered. Next, lines of research revealing the human need to understand reward contingencies as well as research indicating factors (such as extrinsic rewards, externally imposed controls, and negative feedback) that diminish intrinsic motivation are reviewed. Factors such as choice and positive competence feedback that tend to foster intrinsic motivation are also discussed. Special emphasis is subsequently given to additional studies revealing (1) effect of rewards and communications on intrinsic motivation to be dependent on whether they are interpreted by recipients as primarily informational or controlling, and (2) differences in achievement and motivation between active and passive learners. In conclusion, problems such as the work conditions in schools that undermine teacher's intrinsic motivation and the curriculum standardized for accountability associated with creating classroom programs characterized by intrinsic motivation, informational contingencies, and autonomous learning are pointed out. (Author/RH)

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Curiosity and Self-directed Learning: The Role of Motivation in Education[1]

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For young children, self-directed learning is a fact of life. They are curious, they go to things that interest them, they marvel at each new discovery, and they drive their parents crazy with questions.

For older children, however, there seems to be considerable resistance to learning, and much of the learning that they do seems to depend on directives from teachers or parents, on grades and gold stars, on various forms of external recognition.

What has happened to the enthusiasm, the inner desire for understanding and mastering their world? Why does their learning seem so closely tied to demands, controls and rewards?

Our answer to these questions is grounded in our motivational theory (e.g., Deci, 1980; Deci & Ryan, 1980) and a plethora of recent research studies. In this chapter we shall review the research and theory and then draw implications that are directly germaine to early childhood education.

Motivation Orientations

In essence, people can, at any given time, be in one of three different motivational states--intrinsically motivated, extrinsically motivated, or amotivated. When intrinsically motivated the reward for the activity seems to be part and parcel with the activity itself--there is no reward separate from the spontaneous feelings and thoughts that accompany the activity. Intrinsically motivated behavior is based in people's innate need to be competent and self-determining (White, 1959; deCharms, 1968; Deci, 1975). Curiosity, exploration, and play are examples of this type

of activity. The self-directed learning of little children is paradigmatic of intrinsically motivated behavior; it is active, involving, open-minded; it includes surprise and wonder; it leads children toward mastery of their environments and provides them with the tools to be more self-determining.

When extrinsically motivated, people are working toward some external reward--it might be money, good grades, status, approval, or the avoidance of an unpleasant event. The behavior tends to be a means to some end rather than a part of the end. When extrinsically motivated, people tend to feel more pressured, and less involved with the activity itself--their attention is partially focused on the desired outcome rather than on the activity itself. The learning of older children seems to be more extrinsic in nature--they often see it as a means to good grades, to teacher or parental approval, to compliance with deadlines and demands. The learning is no longer an expression of their curiosity and interest. As Condry and Koslowski (1979) pointed out, the problems with extrinsically motivated learning are that the learning tends to be less thorough and the learners tend to lose control of the learning situation.

When amotivated, people tend to be passive and non-responsive. They seem to believe that they cannot have a meaningful impact on their environment, so they tend not to behave. They frequently feel helpless and are easily upset. Their learning is slow and seems to be painful.

Most classrooms have children that exemplify each of these motivational orientations. There are children who are curious and prefer challenges--who are interested in their work and eager for more. They seem to be intrinsically motivated and are involved in directing their own learning. Other children seem to do just what they are told to do, but they take no

responsibility for themselves. They are compliant and often high-achievers, but they depend on the teacher for direction and affirmation. They are extrinsically motivated, and their behavior is dependent on external contingencies. Interestingly, there is a second type of behavior that is dependent on external contingencies, namely, rebellious or defiant behavior. These children are dependent on external contingencies so they can do just the opposite of what is demanded. Brehm (1966) referred to this as reactance and suggested that when people feel as if their freedom is threated, they react against those threats by doing the opposite. Externally oriented people, people who are primarily oriented toward extrinsic contingencies, may be either compliant or rebellious; most often they display a mix of the two types of responding. In either case, however, they fall short of the ideal student, for they do not seem to be interested in learning for its own sake, they do not seem to be taking responsibility for their learning.

Finally, in most classrooms, we find some children who are rather passive, who seem to be amotivated. They do not perform well, for they get overwhelmed by the material, it all seems like too much for them. They tend to be helpless.

While one could categorize most children in each classroom as falling into one of these three orientations, undoubtedly every child experiences all three of these motivational states at one time or another. It is equally true that as adults each of us is, at times, intrinsically motivated, extrinsically motivated, or passive and amotivated. As teachers, it is particularly important to have experienced these motivational sets in ourselves, since that provides the basis for understanding the corresponding experiences of students and for grasping the conditions that produce

those experiences.

Motivational States and the Environment

Clearly, in the ideal classroom, we would find children who are intrinsically motivated a substantial portion of the time. Yet the ideal classroom is hard to find. Indeed, many classrooms are filled with children who are extrinsic or amotivated. How does this come about? And what are the possibilities for structuring classrooms that promote intrinsically motivated learning? To answer these questions we turn to an exploration of the effects of the environment on people's motivation.

Consider first the amotivated child. Seligman (1975) and his colleagues (Garber & Seligman, 1980) have reported a great deal of research that speaks directly to this issue. They have suggested that when people operate in an environment which seems to them to have response-outcome independence, they learn to be helpless. In other words, when their own behavior does not lead to predictable outcomes, they come to believe that desired outcomes do not accrue from their own directed efforts but rather are delivered by chance or fate.

The key element in these environments is inconsistency. Rewards may accrue to the person, but they do not accrue in any predictable or understandable way. In our own theorizing, we suggest that such environments undermine one's sense of personal effectance, i.e., the sense that one can competently achieve one's goals. In the absense of a contingently responsive environment one develops a sense of failure and an expectation that continued initiations and efforts are furitless. Frequently this generalizes to a sense that one's self is worthless, in other words, it leads to low self-esteem.

Such an environment was created in a study by Hiroto (1974). He exposed students to uncontrollable noise. Subsequently, he had them work with a finger-maze activity through which they could contingently control the noise. He found, however, that after they had learned to be helpless in relation to the noise, they failed to gain control over it, even when the control was available to them; they were passive and seemed unable to learn.

The work of Rotter (1966) and his colleagues has further highlighted the importance of environments in which there is a perceived relationship between behavior and outcomes. In environments where this relationship does not appear to exist, people develop what Rotter termed an external locus of control, and research has indicated that an external locus of control is associated with deficits in motivation and learning as well as a variety of psychological and physical malfunctions (see Lefcourt, 1976, for a review).

These two lines of research point unambiguously to people's need to understand contingencies. People must learn that there is a relationship between behaviors and outcomes; they must learn that there is the possibility for them to behave in ways that lead predictably to desired outcomes.

Recent research in a somewhat different vein has indicated, however, that simply having response-outcome dependence is not enough for intrinsically motivated, self-directed behavior. Contingencies in the environment prevent helplessness and amotivation, but they can produce an extrinsically-oriented, compliant or reactive child as well as an intrinsically-oriented, self-determining child. To clarify this important point we shall turn to a brief review of relevant research.

Extrinsic Rewards and Feedback

In some early studies, Deci (1971, 1972) found that when college-student subjects were paid for working on interesting activities, they displayed less intrinsic motivation in a subsequent free-choice period than subjects who had spent the same amount of time working with the activity but who had not been paid for it. In other words, the payments, which were clearly contingent, seem to have undermined their intrinsic motivation for the activity. Their behavior seems to have become dependent on the rewards, and they were less likely to do the activity in the absence of the rewards. Subsequent research replicated this finding with a variety of rewards, tasks, and age groups (see Deci & Ryan, 1980).

Lepper, Greene, and Nisbett (1973) found that rewarding pre-school children with a "good player award" for working on an art project decreased their intrinsic motivation for working with the art materials. Ross (1975) found the same to be true when children were rewarded with desired food. Deci and Cascio (1972) found that being rewarded with the "avoidance of a punishment" for doing well on an activity also decreased intrinsic motivation in much the same fashion as was the case for the more "positive" rewards.

It appears to be the case that the administration of rewards leads the recipients to understand their behavior as being caused by the rewards so they subsequently perform the behavior only in the presence of a reward contingency. Rewards are not the only extrinsic factors that have been shown to undermine intrinsic motivation. Amabile, DeJong and Lepper (1976) found that when deadlines were imposed on an activity subjects lost intrinsic motivation for the activity. Similarly, Lepper and Greene (1975) found that adults' surveillance of children's behavior

undermined the children's intrinsic motivation. And Deci, Betley, Kahle, Abrams and Porac (1981) found that when subjects were explicitly directed to compete against an opponent they lost intrinsic motivation for the activity on which they competed. Whenever people's behavior becomes controlled by some extrinsic factor, they seem to be left with less intrinsic motivation.

Earlier we stated that intrinsic motivation is based in people's need to be competent and self-determining. Apparently, the fact of the rewards or controls undermines their sense of self-determination, for they begin to see their behavior as being determined by the reward contingencies rather than by their own interest in the activity.

The competence component of intrinsic motivation can also be the means through which intrinsic motivation is undermined. Deci, Cascio and Krusell (1973) found that when subjects failed at an interesting activity, or when they were told that they had done quite poorly, they were less intrinsically motivated than subjects who had done the same activity without the failure or without the negative feedback from the experimenter.

In sum, we have seen that extrinsic rewards, externally imposed controls, and negative feedback undermine intrinsic motivation and leave people's behavior dependent on external factors. This would be characteristic of the extrinsically-oriented, compliant or reactive children discussed earlier. Given this plethora of discouraging results, is there no hope?

Fortunately, other studies have highlighted the factors that tend to foster intrinsic motivation. There seem to be two types of factors. One is choice. Zuckerman, Porac, Lathin, Smith and Deci (1978) found that when college-student subjects were given choice about what puzzles to

work on and how long to spend working on them, they were more intrinsically motivated than subjects who were assigned the puzzles and time limits chosen by their counterparts. Swann and Pittman (1977) found similar results with young children.

The second factor that has been shown to enhance intrinsic motivation is positive competence feedback. When subjects get feedback indicating that they are quite competent, they seem more interested in the activity and they persist at it longer than subjects who do not get the feedback (Anderson, Manoogian, and Reznick, 1976; Blanck, Jackson and Reis, 1979; Harackiewicz, 1979). In short, just as controlling rewards and negative feedback have been shown to decrease intrinsic motivation, choice and positive feedback have been shown to increase intrinsic motivation.

Information and Control

The research studies presented above, along with numerous others that lend further support to the conclusions (see Deci & Ryan, 1980 for an extensive review), suggest that extrinsic rewards undermine intrinsic motivation by creating a dependency between the behavior and the reward. However, one might wonder, since rewards are often used to convey competence at the activity (much like positive feedback), why can't they enhance intrinsic motivation?

Deci (1975) and Deci and Ryan (1980) have suggested that all rewards and communications have two functional aspects--a controlling aspect and an informational aspect. The function of the controlling aspect is to bring about a particular behavioral outcome that is desired by the rewarder or communicator. The function of the informational aspect is to provide the recipient with information that is relevant for his or her performance. Since every reward has these two aspects, the relative

salience of the two aspects determines the effects of the reward or communication on intrinsic motivation. Thus, it might well be that a reward like money or praise could be administered in such a way as to facilitate intrinsic motivation by conveying positive competence information rather than attempting to control behavior. Several recent studies have found exactly that.

Enzle and Ross (1978) and Rosenfield, Folger and Adelman (1980) both found that subjects who were paid informationally were more intrinsically motivated than subjects who were paid controllingly. Even though the activity and financial rewards were the same, intrinsic motivation was differentially affected by the differential salience of the informational versus controlling aspect of the rewards.

Pittman, Davey, Alafat, Wetherill and Wirsul (1980) found the same results with verbal rewards. With one group of subjects the experimenter simply told subjects that they were doing very well at the task, whereas for a second group the experimenter told the subjects that they were doing very well and that meant that their data would be useful to the researchers. In both groups there was verbal feedback, but for the second group the fact that the experimenter seemed invested in the outcome (so the data would be useful) seemed to highlight the controlling aspect of the feedback, and therefore it decreased the subjects' intrinsic motivation relative to that of the subjects who were given the feedback informationally.

Ryan (1981) has found that controlling feedback administered by oneself can have the same detrimental effect as controlling feedback administered by others. In his study, feedback was considered controlling when it included an evaluation of whether subjects were "doing as well as they should be," and it was considered informational when it simply

located subjects' performance relative to the average and the maximum possible performance. Some subjects administered informational feedback to themselves whereas others selected the evaluative (controlling) feedback that they thought was appropriate for themselves and then administered it to themselves. He found that self-administered controlling feedback undermined intrinsic motivation relative to the self-administered informational feedback just as was the case with other administered controlling versus informational feedback.

The important point from all of these studies is that the effect of rewards and communications on intrinsic motivation depends on whether they are interpreted by the recipients as being primarily informational or primarily controlling. This is very important in schools--as well as in other institutions--for rewards and communications are integral parts of educational systems. When rewards such as grades, gold stars, and verbal feedback are used controllingly they are likely to undermine intrinsic motivation whereas when they are used informationally they could maintain or enhance it.

Intrinsic Motivation in School Children

To test this last assertion, Deci, Nezlek and Sheinman (1981) did a study in 35 fourth through sixth grade classrooms. They reasoned that teachers could be located along a continuum ranging from "highly controlling" to "highly supportive of autonomy," in terms of their general orientation toward relating to children. Those teachers who were oriented toward control would be expected to communicate and reward controllingly whereas those teachers who were oriented toward autonomy would be expected to communicate and reward informationally. Thus, teachers who were more control oriented were predicted to have children with lower intrinsic

motivation than teachers who were more autonomy oriented. The results supported our prediction. In addition, children in the control-oriented classrooms had a significantly lower perception of their cognitive competence and a lower sense of general self-worth than the children in the autonomy-oriented classrooms. A follow-up study (Deci, Schwartz, Sheinman, & Ryan, in press) indicated that teachers' orientations can have a significant impact on the intrinsic motivation and self-esteem of children within the first two months of a school year.

In a complementary study, deCharms (1976) found that when teachers were trained to be more autonomy oriented, their pupils were more motivated than children in classrooms where the teachers had not been trained. In that study, he found not only greater intrinsic motivation and satisfaction among the children in the autonomy-oriented classrooms, but also better academic performance. Intrinsically motivated children seem to learn better than extrinsically motivated children. The finding that intrinsically motivated people perform better at learning or other challenging activities has been confirmed in a great many laboratory studies as well (see McGraw, 1978).

Let us now summarize the general argument and its empirical foundation. We have categorized three general types of environments: a non-contingent, non-responsive environment; a contingent, demanding and controlling environment; and a contingent, responsive and choiceful environment. The non-contingent environment fosters amotivation and helplessness; the controlling environment fosters extrinsically motivated (compliant or reactive) behavior; and the contingent responsive environment foster intrinsically motivated behavior.

Evidence is clear on the issue of contingency. Children must perceive a relationship between their own behavior and desired outcomes, otherwise they will tend to be amotivated and helpless. But contingency alone is not enough for intrinsically motivated children. Contingent outcomes can be quite detrimental to children's intrinsic motivation if they are intended to control rather than inform. The contingent outcomes must be responses to children's initiations if they are to strengthen the children's intrinsic motivation and self-determination. If they are administered in a way that demands or controls the children's behavior rather than responds to it, they can have a detrimental effect. Of course, it is preferable to have contingent and demanding outcomes than to have non-contingent and unpredictable outcomes, for the former will at least foster extrinsic motivation. But neither represents the ideal, for neither encourages the kind of curiosity and self-directed learning that is so delightfully apparent in most two and three year old children.

Active Learning

The abundance of research related to intrinsic motivation lends credence to the ideas that have been espoused by some educational theorists for years (e.g., Bruner, 1962; Montessori, 1967; Rogers, 1969). As Rogers put it, self-directed education will flourish in an environment that promotes active learning. A key element in such an environment is the attitude of the teacher--or as Rogers would say, the "facilitator of learning." The attitudes that seem to promote learning are ones of trust, empathy, and realness in the teacher. In our studies, we found that an orientation toward autonomy promoted intrinsic motivation; it is likely that our autonomy-oriented teachers were more trusting and empathetic.

Active learning, according to our theory, requires the opportunity to be self-determining--to make one's own choices--and the opportunity to have an impact on the environment--to be competent and effective. In one study, Benware and Deci (1981) attempted to create an active versus a passive motivational set to explore the impact of these sets on motivation and learning. To create the active-learning orientation they asked subjects to learn some material in order to teach it to others. To create the passive set they asked students to learn the material in order to be tested on it. They reasoned that if people learned with the expectation of teaching the material to others, they would be more involved in the learning for they would be preparing to have an impact on their environment--they would be expecting to be active and effective. Students in the two groups spent the same amount of time learning, but results indicated that the active learners were more intrinsically motivated and more satisfied than the passive learners. Even more importantly, the conceptual learning of the active group far surpassed the conceptual learning of the passive group, though interestingly, the rote learning of the two groups was the same. Passive learners memorize material well and hence will do well on memory-oriented tests, but they do not achieve the conceptual understanding that characterizes active learning. Incidentally, the active learners in this study never actually taught the material, they simply learned it with the expectation of teaching, and still they reported being highly intrinsically motivated, and their learning was more complete.

Aronson, Stephan, Sikes, Blaney, and Snapp (1978) did a number of experiments in on-going classrooms in which they set up cooperative groups that involved each member of the group teaching things to all other members. This seemed to create a sense of interdependence and mutual goal orientation

that improved attitudes, motivation and learning. The opportunity to work together in a supportive environment was the key to effective learning.

It is important to note that an autonomy orientation in relation to learning does not mean abandoning structure; it means creating structures that allow freedom within limits (Ginott, 1972), that allow children to solve their own problems, that provide guidance and allow children to assess their own competence. Such structures would focus on outcomes rather than means, and they would be informational rather than controlling. With such structures children would have more opportunity to direct their learning with their own curiosity, and the result is likely to be enhanced learning and greater satisfaction.

The idea of self-directed learning within informational structures leads to some interesting paradoxes. For example, as teachers, we all want our students to succeed. Yet, it can be quite detrimental to try to control them toward success. If we allow children to fail, they are more likely to succeed. Allowing them to fail, lets them choose to succeed, and once they've chosen success they will embrace it more fully. If we try to make our students succeed they will either be compliant and therefore never be able to take full responsibility for success, or they will fail reactively as a means to regain their freedom.

As teachers it is important not to become too invested in particular behavioral outcomes, for such investment is likely to lead to control and to promote feelings of failure when desired outcomes are not achieved. It is important to care about students' success, but in the final analysis the choice must be left to them. This will not guarantee success, but neither does the currently pervasive extrinsic controlling system result

in "schools without failure."

The Problems for Teachers

The main thrust of our discussion has included: first, the expressed value that a classroom full of intrinsically motivated children is the preferred classroom, and second, the assertion that autonomy-oriented, informational, classroom environments are the ones that are most likely to foster intrinsic motivation in the children.

For teachers this is a tall order (see Deci & Ryan, in press.). It is easy to suggest that they impliment informational styles and autonomy orientations, provide contingent responsiveness to childrens initiations, and be supportive of children in times of failure. However most teachers find themselves in demanding systems with sizable classrooms of heterogeneous students. Teachers themselves are increasingly faced with controlling reward structures, deadlines, constraints, surveillance, and external evaluations, all factors which we previously cited as undermining intrinsic motivation. In the same way that children, in order to remain intrinsically motivated to learn, need teachers who respond to their initiations and support their mastery attempts, teachers, in order to remain intrinsically motivated to teach, need administrators who respond to their initiations and support their mastery attempts. When administrators are more autonomy-oriented, when they provide teachers with opportunities to try new things, to teach in their own ways, to choose optimal challenges, the teachers seem to be more intrinsically motivated.

Unfortunately, the conditions that facilitate intrinsic motivation for teachers may be more the exception than the rule. Our interviews with teachers have suggested that there are many threats to the mainte-

nance of their intrinsic motivation. Increasingly, they report that the demands on their time and energy are growing and that the pressures toward compliance are greater. By way of illustration consider just one example of such pressures that came up repeatedly in our discussions with teachers, namely the movement toward standardized curricula.

The Standardized Curriculum

In the modern age there is a growing trend for what many would term "accountability." This trend is particularly impactful upon educational institutions, primarily because of their accessibility to the public domain. Schools are accountable to parents, taxpayers, and governments. These interest groups seek guarantees that they are getting what they paid for, and they want the results to be tangible. An outgrowth of this movement is the increasing use of large-scale, standardized curriculum projects, standardized evaluations of students, and a massive flow of paper work to document the output of teachers.

There certainly is some utility to the use of these procedures. We, like the teachers we interviewed, believe that there are basic skills and understandings--things like reading and writing English or having a working familiarity with arithmetic--that children should acquire. Nonetheless, it appears to be the case that there are some unintended, though rather serious, consequences to the imposition of standardized curricula. In the words of an experienced teacher whom we interviewed:

> "Even when the required material is the same that I would have taught, I resent being told how I have to teach. It just kills my motivation for teaching."

Stated in our language, the teacher was saying that the increasing

standardization robs her of the opportunity to be self-determining, and that seems to be undermining her intrinsic motivation. It is difficult for her to maintain an informational, autonomy-orientation when she herself feels over-controlled.

Along with the packaged curricula come increased paper work, surveillance, and evaluation. On this score the evidence is clear; if standardized curricula tend to kill interest and motivation, the increased emphasis on evaluation drives another nail in the coffin. These added demands deplete the energy of teachers who, under other conditions, might invest their efforts in the classroom where it is needed. Increased demands in an educational environment where there are diminishing resources and have fewer teacher's aids also feeds into a sense of ineffectance, and that prevents teachers from accomplishing the goals that the majority of them value most.

Conclusion

Most educators agree that an important goal of the educational process is encouraging students to be self-directed and interested in learning. They want children to learn the fundamentals and to use them in creative problem-solving. In motivational terms, they want children to be intrinsically motivated.

The goal of having intrinsically motivated children seems best achieved when teachers themselves are intrinsically motivated, when they are excited, involved, self-directed, and trying new things. When teachers are intrinsically motivated, they will, it seems, be more supportive of children's attempts at independence and mastery, and they will be more informational in the use of rewards and communications. The children need supportive teachers, teachers who are oriented toward autonomy, but in order for

teachers to remain autonomy-oriented and to encourage intrinsic learning they themselves will need to feel supported, they themselves will need to have opportunities to be competent and self-determining. If the climate of the educational system were to become more informational and autonomy-oriented, the various people who learn and work in the system would undoubtedly experience more intrinsic motivation for their learning and working.

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